

# **Automatic Cleaning Apparatus for Paint Sprayer Gun**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the invention**

The present invention relates to automatic cleaning apparatus  
5 for paint sprayer gun, and more particularly, to an cleaning  
apparatus for paint sprayer gun which employs compressed air as its  
power source so as to eliminate hazardous electrostatic induction  
owing to mechanical friction caused by rotation of apparatus  
components during the cleaning operation. Accordingly, the  
10 cleaning apparatus has noticeable advantages of low noise, simple  
structure, high security, prolonged lifetime, high flexibility and  
low production cost.

### **2. Description of the Prior Art**

15 In a conventional paint sprayer gun, it is normally composed  
of a gun body, a nozzle, and a paint container, and the nozzle  
further includes various components such as a nozzle tube, an air  
inlet collar etc. This causes that the paint sprayer gun must be  
20 cleaned after use so as to remove undesired remainder of paint in  
the component parts of the gun thereby preventing degrading  
performance of the paint sprayer gun, or mingling the paint color by  
remaining paint with the new one. Accordingly there has appeared  
an automatic cleaning apparatus for paint sprayer gun specially for  
25 cleaning up each component part of the apparatus.

Incidentally, a conventional cleaning apparatus employs an air

compressor associated with a pump as its power source. This causes the conventional cleaning apparatus has to operate with a high cost and high noise. Moreover, the way of motion, such as rotation and reciprocation (pump motion) that the conventional  
5 cleaning apparatus relies on is apt to cause explosion of cleaning solvent (such as benzene) contained in the apparatus owing to electrostatic induction induced by mechanical friction thereof.

Aiming at the above depicted defects, the present inventor is to propose a newly developed automatic cleaning apparatus for paint sprayer gun simply constructed with a low production cost, and capable of operating at low noise, high security and prolonged lifetime.

## SUMMARY OF THE INVENTION

It is an object of the present invention to provide an automatic cleaning apparatus for paint sprayer gun which comprises a solvent cleaning tank with a compressed air inlet at one side, and a cleaning tank having a plurality of vertical different length first tubes. At least a nozzle is provided at one end of each first tube, and all the other ends of the first tubes are connected together to a second tube. A third tube is connected to the second tube at a proper position thereof. The other end of the third tube is appropriately inserted into the solvent cleaning tank such that the pressurized air is able to enter the solvent cleaning tank thereof from the air inlet and force the solvent to go through the other opening end of the third pipe and is ejected from the individual nozzles. Besides, an entrainer is provided in the cleaning tank, and

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a plurality of through holes are formed on the board surface of the entrainer and communicating with the nozzles of the first tubes to accept the solvent cleaned out from the component parts of each paint sprayer gun placed in the cleaning tank. Moreover, a check  
5 valve is installed at a proper position between the cleaning tank and the solvent cleaning tank for collecting the solvent to flow back to the solvent cleaning tank. In this version, those shortcomings inherent to the conventional techniques described above can be eliminated by the present invention employing  
10 compressed air as the power source for cleaning.

It is another object of the present invention to provide an automatic cleaning apparatus for paint sprayer gun, wherein the compressed air inlet has a safety valve and a time counter such  
15 that the time counter is able to indicate the safety valve to interrupt the entry of the compressed air from the inlet after air pressure has reached to a prescribed value. Besides, an upper lid is provided for the cleaning tank and a micro switch capable of detecting the air pressure is installed at one corner side of the lid. As soon as the lid is lifted up, the micro switch is actuated to  
20 interrupt entry of the compressed air from the inlet so that the nozzles can not eject the solvent thereby protecting the operator securely from being hurt by ejected solvent.

For fuller understanding of the nature and objects of the invention, reference should be made to the following detailed  
25 description taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a cross sectional view of the present invention.

Fig. 2 is a cross sectional view in another embodiment of the  
5 present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figs. 1 and 2, the automatic cleaning apparatus  
10 10 for paint sprayer gun of the present invention comprises a  
solvent cleaning tank 11 with a compressed air inlet 12 at one side  
thereof which is communicated with an air compressor (not  
shown).

The present invention also comprises a cleaning tank 13  
15 having a plurality of vertically erected first tubes 14 of different  
lengths. Each first tube 14 is equipped with at least a nozzle 141  
at its one end, while the other ends are mutually communicated  
with one another with a second tube 15. A third tube 16 is  
connected to the second tube 15 at a proper position thereof. The  
20 other end of the third tube 16 is appropriately inserted into the  
solvent cleaning tank 11 such that the pressurized air is able to  
enter the solvent cleaning tank 11 from the air inlet 12 and force  
the solvent to pass through the other opening end of the third tube  
16 and is ejected from the individual nozzles 141 as shown in  
25 Fig.1.

Besides, an entrainer 17 is provided in the cleaning tanks 14 at a proper height, with all first tubes 14 penetrating through it, and a plurality of through holes 171 are formed on the board surface of the entrainer 17 and communicating with the nozzles 141 of the first tubes 14 to accept the solvent cleaned out from the component parts (not shown) of each paint sprayer gun placed in the cleaning tank 13. Moreover, a check valve 18 is installed at a proper position between the cleaning tank 13 and solvent cleaning tank 11 for collecting the solvent to flow back to the solvent cleaning tank 11. rubbishes in the solvent is filtered by a filter cloth 181 equipped with the check valve 18.

In the present invention, the wall of the solvent cleaning tank 11 can be combined with that of the cleaning tank 13 (see Fig.1), or two walls are separated (see Fig.2, the second embodiment). As shown in Fig.2, a lid 111 is covered on the solvent cleaning tank 13 to which the other end of the third tube 16 is extended thereto for installing the check valve 18.

In the present invention, a safety valve 121 an air release valve and a time counter 122 are installed at the air inlet 12 such that the time counter 122 is able to indicate the safety valve 121 to interrupt entry of the compressed air after air pressure has reached to a prescribed value, and at the same time releases the remaining air pressure in the solvent tank 11 outside via another passage (not shown) of the safety valve 121 thereby halting the flow of solvent.

In the present invention, an upper lid 131 is provided for the

cleaning tank 13 and a micro switch 132 capable of detecting the air pressure is installed at a cornerside on the lower surface of the lid 131 such that the micro switch 132 is actuated to interrupt entry of the compressed air from the air inlet 12 when the lid 131 is lifted up thereby prohibiting the nozzles 141 to eject the solvent and protecting the operator securely not to be hurt by ejected solvent. Meanwhile, the micro switch 132 is actuated to let compressed air going into the apparatus from the air inlet 12 and egress the air in the solvent tank from the air release valve quickly for performing cleaning work when the lid 131 is opened.

As described above, the automatic cleaning apparatus for paint sprayer gun according to the present invention employs compressed air as its power source so that possible hazardous electrostatic induction owing to mechanical friction caused by rotating of apparatus components during the operating can be prevented. Accordingly, this cleaning apparatus has noticeable advantages of low noise, simple structure, high security , prolonged lifetime, high flexibility and low production cost.

Those who are skilled in the art will readily perceive how to modify the invention. Therefore, the appended claims are to be construed to cover all equivalent structures which fall within the true scope and spirit of the invention.